Using Shift for Remote Transfers and Tar Operations

Transfers between a remote system and a host system within the NAS enclaveâ for example, between your local system and a Pleiades Front-End node (PFE)â must be carried out using the Secure Unattended Proxy (SUP).

To use the SUP for Shift transfers to NAS systems, you must first download the SUP client, authorize one or more NAS hosts for SUP operations, and then authorize one or more NAS directories for writes. A brief summary of these steps is shown below. For a full overview, see Using the Secure Unattended Proxy.

TIP: For higher-performance remote transfers, you can download and install bbFTP to make it available for Shift to use. Please note that bbFTP does not encrypt the data.

Downloading SUP to Enable Remote Transfers

Complete the following steps to set up your system for remote transfers:

1. Download and install SUP client (one time):

```
your_local_system% wget -O sup https://www.nas.nasa.gov/hecc/support/kb/file/9
your_local_system% chmod 700 sup
your_local_system% mv sup ~/bin
```

2. Authorize host for SUP operations (one time per host):

```
your_local_system% ssh pfe21
pfe21% touch ~/.meshrc
```

3. Authorize directories for writes (one or more times per host):

```
your_local_system% ssh pfe21
pfe21% echo /tmp >>~/.meshrc
pfe21% echo /nobackup/$USER >>~/.meshrc
pfe21% echo /u/$USER >>~/.meshrc
```

4. Download and install bbFTP (optional for higher performance)

Performing Remote Transfers

For remote transfers, the **shiftc** syntax is similar to local transfers and transfers between two hosts within the enclave, except that you must prepend **sup** (the SUP client) to each **shiftc** command. Also, remote Shift transfers must always be initiated from the system that is external to the NAS enclave, but files may be transferred in either direction.

```
sup shiftc [OPTION]... source dest
sup shiftc [OPTION]... source... directory
sup shiftc [OPTION]...
```

For example, the following enclave-to-enclave transfer copies *file1* into the directory **~/data/*run2* on lfe5:**

```
pfe21% shiftc /home/username/file1 lfe5:~/data/run2
```

If the above example were changed into a remote transfer, it would become:

```
your_local_system% sup shiftc /home/username/file1 lfe5:~/data/run2
```

In general, **shiftc [*args*]** becomes **sup shiftc [*args*]**.

Note: For information about Shift options, including those used in the examples in this article, see Shift Command Options.

File Transfer Examples

The examples in this section show you how to transfer files between your local system and a host within the enclave. The first example includes output; subsequent examples show only the command line.

- Perform a remote transfer via the Secure Unattended Proxy (for example, ***/username/file1*** on your local system to your home directory on pfe*21*):

```
your_local_system% sup shiftc /username/file1 pfe21:
Shift id is 3
Detaching process (use --status option to monitor progress)
```

- Recursively copy local directory ***/username/dir1*** on your local system to directory ***/username/dir2*** on lfe*5*:

```
your_local_system% sup shiftc -r /username/dir1 lfe5:/username/dir2
```

- Recursively copy remote directory ***/username/dir2*** on lfe*5* to the current directory on your local system using an encrypted transport:

```
your_local_system% sup shiftc -r --secure lfe5:/username/dir2 .
```

Creating and Extracting Tar Files Remotely

You can use Shift to transfer a directory and write it into a tar file it in one step, resulting in a portable tar file that can be read by either **shiftc** or **tar**. In the same step, you can also create a table-of-contents (.toc) file that lists the files contained in the archive along with their sizes and attributes (recommended).

Because of their sequential nature, tar files cannot be efficiently updated in place. As a workaround, incremental tar files can be used, which are separate tar files that consist of files updated after the time the original or subsequent incremental updates were created.

Creating Tar Files

This example creates a tar file (*dir1*.tar) of the directory *dir1* on your local system directly into your Lou home directory, along with a corresponding table of contents (*dir1*.tar.toc):

```
your_local_system% sup shiftc --create-tar --index-tar dir1 lfe:dir1.tar
```

Note:? If the *dir1* directory is over 1 TB, it will be split into multiple tar files prefixed with *dir1*.

Creating Incremental Tar Files

The example in this section shows you how to create incremental tar files from your local system to your Lou home directory.

Create an incremental tar file (*dir1*-2020.tar) of all files modified on or after January 1st, 2020 in the directory *dir1* on your local system directly to your Lou home directory, along with a corresponding table of contents (*dir1*-2020.tar.toc):

```
your_local_system% sup shiftc --create-tar --index-tar --newer="Jan 1 2020" dir1 lfe:dir1-2020.tar
```

Extracting Tar Files

These examples show you how to extract tar files from your local system to your Lou home directory.

- Extract the *dir1*.tar file from your local system to your Lou home directory:

  ```
  your_local_system% sup shiftc --extract-tar lfe:dir1.tar .
  ```
- If *dir1* was over 1 TB and therefore split into multiple tar files:

  ```
  your_local_system% sup shiftc --extract-tar lfe:'dir1.*tar' .
  ```

  Note: As shown in this example, quotation marks are required when using wildcards (e.g., *) with sources on a remote host.
- Extract the files *1g.20* through *1g.29* from *dir1*.tar from your local system to your Lou home directory:

  ```
  your_local_system% sup shiftc --extract-tar --include='1g\.2[0-9]' lfe:dir1.tar .
  ```

  Note: As shown in this example, **shiftc** uses Perl-style regular expressions for some options.

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